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 NEWS 11  Jun 10   PCTFULL has been reloaded
 NEWS 12  Jul 02   FOREGE no longer contains STANDARDS file segment
 NEWS 13  Jul 22   USAN to be reloaded July 28, 2002;
                   saved answer sets no longer valid
 NEWS 14  Jul 29   Enhanced polymer searching in REGISTRY
 NEWS 15  Jul 30   NETFIRST to be removed from STN
 NEWS 16  Aug 08   CANCERLIT reload
 NEWS 17  Aug 08   PHARMAMarketLetter(PHARMAML) - new on STN
 NEWS 18  Aug 08   NTIS has been reloaded and enhanced
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                   now available on STN
 NEWS 20  Aug 19   IFIPAT, IFICDB, and IFIUDB have been reloaded
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 NEWS 22  Aug 26   Sequence searching in REGISTRY enhanced
 NEWS 23  Sep 03   JAPIO has been reloaded and enhanced
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 NEWS 25  Sep 16   Indexing added to some pre-1967 records in CA/CAPLUS
 NEWS 26  Sep 16   CA Section Thesaurus available in CAPLUS and CA
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=> s invertase(w)inhibitor
L1 126 INVERTASE(W) INHIBITOR

=> s l1 and maize
L2 1 L1 AND MAIZE

=> d l2 1

L2 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2002 ACS
AN 1971:445621 CAPLUS
DN 75:45621
TI Invertase inactivator in ***maize*** endosperm and factors affecting inactivation
AU Jaynes, T. A.; Nelson, Oliver Evans
CS Dep. Bot. Plant Pathol., Purdue Univ., Lafayette, Indiana, USA
SO Plant Physiol. (1971), 47(5), 629-34
CODEN: PLPHAY
DT Journal
LA English

=> s l1 and plant
L3 58 L1 AND PLANT

=> s l3 and transform?

L4 12 L3 AND TRANSFORM?

=> duplicate remove l2
PROCESSING COMPLETED FOR L2
L5 1 DUPLICATE REMOVE L2 (0 DUPLICATES REMOVED)

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L6 6 DUPLICATE REMOVE L4 (6 DUPLICATES REMOVED)

=> d l6 ibib ab 1-6

L6 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2002:391382 CAPLUS
DOCUMENT NUMBER: 136:397068
TITLE: Tissue-specific promoters specific to aerial or underground tissues of sugarbeet and their use in engineering ***plant*** metabolism
INVENTOR(S): Hehl, Reinhard; Kloos, Dorothee; Stahl, Dietmar Juergen
PATENT ASSIGNEE(S): KWS Saat A.-G., Germany
SOURCE: Eur. Pat. Appl., 57 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1207204	A1	20020522	EP 2000-124989	20001116
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
WO 2002040687	A2	20020523	WO 2001-EP13214	20011115
W: US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				

PRIORITY APPLN. INFO.: EP 2000-124989 A 20001116
AB Tissue-specific promoters of sugar beet that may be used to drive tissue-specific expression of a foreign gene are described. Promoters that are specific to the beet or to the aerial parts of the ***plant*** are described. Root- and leaf-specific cDNAs of beet were identified by suppression subtractive hybridization and the cDNAs used to identify the genes and their flanking regions. Two genes that were strictly limited to the vegetative root and one specific to aerial parts were identified. The aerial parts-specific gene showed a strain-dependent variation in copy no. The tissue-specificity of the promoters was demonstrated by use of luciferase reporter genes in tissues ***transformed*** by microparticle bombardment. The two root-specific promoters showed long stretches that were almost identical.
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:598024 CAPLUS

DOCUMENT NUMBER: 135:178157
TITLE: Usage of ***invertase*** ***inhibitors*** to modulate invertase activity in ***plant*** and kernel development and to protect ***plants*** against harmful/detrimental effects of stress and adverse environmental conditions
INVENTOR(S): Helentjaris, Tim; Bate, Nicholas John; Allen, Stephen M.
PATENT ASSIGNEE(S): Pioneer Hi-Bred International, Inc., USA; E.I. Du Pont De Nemours and Co.
SOURCE: PCT Int. Appl., 83 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001058939	A2	20010816	WO 2001-US4492	20010212
WO 2001058939	A3	20020307		
W: AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2001044941	A1	20011122	US 2001-780717	20010209

PRIORITY APPLN. INFO.: US 2000-181509P P 20000210

AB Methods and compns. for increasing yield in ***plants*** , particularly seed ***plants*** , are provided. The compns. comprise novel nucleic acid mols. encoding ***invertase*** ***inhibitors*** , antisense nucleotides corresponding to ***invertase*** ***inhibitors*** , and variants and fragments. Such compns. find use in methods to modulate invertase activity in ***plants*** . The compns. are also useful in methods to modulate kernel development and for protecting ***plants*** against the harmful/detrimental effects of stress and adverse environmental conditions. The nucleotide sequences may be provided in constructs for temporal, developmental, and tissue performance. ***Transformed*** ***plants*** , ***plant*** cells, tissues, and seeds are addnl. provided.

L6 ANSWER 3 OF 6 AGRICOLA DUPLICATE 1
ACCESSION NUMBER: 1999:60941 AGRICOLA
DOCUMENT NUMBER: IND22000357
TITLE: Ectopic expression of a tobacco ***invertase*** ***inhibitor*** homolog prevents cold-induced sweetening of potato tubers.
AUTHOR(S): Greiner, S.; Rausch, T.; Sonnewald, U.; Herbers, K.
CORPORATE SOURCE: Botanisches Institut, INF, Heidelberg, Germany.
AVAILABILITY: DNAL (QH442.B5)
SOURCE: Nature biotechnology, July 1999. Vol. 17, No. 7. p. 708-711

Publisher: New York, NY : Nature America, Inc.
CODEN: NABIF9; ISSN: 1087-0156
NOTE: Includes references
PUB. COUNTRY: New York (State); United States
DOCUMENT TYPE: Article
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English

L6 ANSWER 4 OF 6 AGRICOLA DUPLICATE 2
ACCESSION NUMBER: 1998:61574 AGRICOLA
DOCUMENT NUMBER: IND21239782
TITLE: In ***transformed*** tobacco cells the apoplasmic ***invertase*** ***inhibitor*** operates as a regulatory switch of cell wall invertase.
AUTHOR(S): Krausgrill, S.; Greiner, S.; Koster, U.; Vogel, R.; Rausch, T.
AVAILABILITY: DNAL (QK710.P68)
SOURCE: The Plant journal : for cell and molecular biology, Jan 1998. Vol. 13, No. 2. p. 275-280
Publisher: Oxford : Blackwell Sciences Ltd.
ISSN: 0960-7412
NOTE: Includes references
PUB. COUNTRY: England; United Kingdom
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English
AB Agrobacterium tumefaciens- ***transformed*** tobacco suspension-cultured cells (TSCC) exhibit no significant quantitative changes of cell wall invertase protein (CWI) during a culture period of 40 days, whereas CWI activity decreases strongly between 10 and 30 days after cell transfer to fresh medium. Western blot analysis revealed that the apoplasmic ***invertase*** ***inhibitor*** (INH) is equally expressed throughout the entire culture period. When apoplasmic protein fractions from 4 and 28 days old cell cultures are chromatographed on Concanavalin A(ConA)-Sepharose, the non-glycosylated INH always coelutes with the ConA-bound fraction, suggesting that (i) INH and the glycosylated CWI form a complex in the apoplasmic space, and (ii) INH binding is not sufficient for CWI inhibition. The high specificity of INH binding to CWI was confirmed by native cathodic polyacrylamide gel electrophoresis. Expression analysis of CWI and INH indicates that, at least during certain stages of ***plant*** development (seedlings, roots of adult ***plants***), CWI activity may be modulated by INH, the latter operating as a regulatory switch.

L6 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 3
ACCESSION NUMBER: 1996:297204 CAPLUS
DOCUMENT NUMBER: 124:336409
TITLE: Sucrose protects cell wall invertase but not vacuolar invertase against proteinaceous inhibitors
AUTHOR(S): Sander, Andreas; Krausgrill, Silke; Greiner, Steffen; Weil, Marion; Rausch, Thomas
CORPORATE SOURCE: Botanisches Institut, Ruprecht-Karls-Universitaet, Im Neuenheimer Feld 360, Heidelberg, D-69120, Germany
SOURCE: FEBS Letters (1996), 385(3), 171-175
CODEN: FEBLAL; ISSN: 0014-5793
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal

LANGUAGE: English

AB Vacuolar (VI) and cell wall invertases (CWI) of higher ***plants*** can be inactivated in vitro and, possibly, in vivo by proteinaceous inhibitors. The resp. mechanisms have not yet been compared. Therefore, partially purified CWI from ***transformed*** tobacco cells and VI from tomato fruit were pre-incubated with ***invertase*** - ***inhibitor*** fractions isolated from the same tissues. Both inhibitors were able to inhibit both invertases. However, VI was fully inhibited within less than 1 min by both inhibitors, whereas inactivation of CWI was much slower. Furthermore, CWI, but not VI, was strongly protected against inhibition by sucrose. A polyclonal antiserum directed against the tobacco inhibitor (INT) cross-reacted with a 19 kDa polypeptide in the partially purified tomato inhibitor (ILE) fraction. The results indicate that INT and ILE have similar structural properties, whereas the mechanism of inactivation is clearly different for CWI and VI.

L6 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 4

ACCESSION NUMBER: 1987:192929 CAPLUS

DOCUMENT NUMBER: 106:192929

TITLE: Endogenous inhibitor of invertase in sugar-beet root ontogeny

AUTHOR(S): Burakhanova, E. A.; Dubinina, I. M.; Kudryavtseva, L. F.

CORPORATE SOURCE: K. A. Timiryazev Inst. Plant Physiol., USSR

SOURCE: Fiziol. Rast. (Moscow) (1987), 34(2), 292-300
CODEN: FZRSAV; ISSN: 0015-3303

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB A low-mol.-wt. protein-inhibitor of invertase was isolated from sugar-beet (Beta vulgaris) roots harvested at different stages of ***plant*** development. The activity of the inhibitor gradually increased with ***plant*** age in the course of root ***transformation*** into the sugar-storage organ. Thus, in 8-day-old seedlings the activity made up 10-12%, in 47-day-old ***plants*** it constituted 20%, and in 86-day-old ***plants*** 50% of its maximal activity level reached in the roots by the end of vegetation. Acid invertase, both intracellular and cell-wall bound, that had been inhibited by the 35th day of root development, was repeatly reactivated during prolonged washings of root disks with water. The reactivation effect decreased with ***plant*** age, that was likely to be due to the activation of ***invertase*** ***inhibitor*** . A relationship was obsd. between the decline in the activity of ***invertase*** ***inhibitor*** , the activation of acid invertase, and the decrease in accumulated sucrose in leached and stored beetroot disks. Thus, the endogenous inhibitor of invertase is of importance in regulating invertase activity, in accumulating sucrose and in retaining its high level during root ontogeny.

=> s yeast(w)invertase and plant and transform?
L7 50 YEAST(W) INVERTASE AND PLANT AND TRANSFORM?

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DUPLICATE PREFERENCE IS 'AGRICOLA, CAPLUS, EMBASE, BIOSIS'
KEEP DUPLICATES FROM MORE THAN ONE FILE? Y/(N):n
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L8 33 DUPLICATE REMOVE L7 (17 DUPLICATES REMOVED)

=> d l8 ibib ab 1-5

L8 ANSWER 1 OF 33 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 1
ACCESSION NUMBER: 2001:738080 CAPLUS
DOCUMENT NUMBER: 136:322128
TITLE: Simultaneous antagonistic modulation of enzyme activities in transgenic ***plants*** through the expression of a chimeric transcript
AUTHOR(S): Fernie, A. R.; Roessner, U.; Leisse, A.; Lubeck, J.; Trethewey, R. N.; Willmitzer, L.
CORPORATE SOURCE: Max-Planck-Institut fur Molekulare Pflanzenphysiologie, Golm, 14476, Germany
SOURCE: Plant Physiology and Biochemistry (Paris, France) (2001), 39(10), 825-830
CODEN: PPBIEX; ISSN: 0981-9428
PUBLISHER: Editions Scientifiques et Medicales Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The aim of this work was to investigate the possibility of modulating different enzyme activities in an antagonistic manner using a single transgenic approach. To this end a yeast (Saccharomyces cerevisiae) cDNA encoding for a .beta.-fructosidase (invertase; EC 3.2.1.26) was introduced into a binary vector in the sense orientation directly coupled to a fragment of the cDNA encoding for the small subunit of potato (Solanum tuberosum) AGPase (EC 2.2.7.27) in the antisense orientation. Transgenic ***plants*** were generated by Agrobacterium-mediated transfer with the expression of both cDNAs being under the control of the tuber specific B33 patatin promoter. The resulting ***transformants*** were screened by anal. of metabolites which are known to change when the targeted enzymes are modulated. Finally, northern anal. coupled with enzymic anal. revealed that the chimeric gene was expressed and that expression led to both the prodn. of ***yeast*** ***invertase*** and the antisense repression of the endogenous potato AGPase activity. We therefore conclude that this method will be of use in metabolic engineering strategies that require a simultaneous up-regulation of one pathway and an inhibition of a second competing pathway.
REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 2 OF 33 AGRICOLA DUPLICATE 2
ACCESSION NUMBER: 2001:50768 AGRICOLA
DOCUMENT NUMBER: IND23211065
TITLE: Patterns of phenylpropanoids in non-inoculated and potato virus Y-inoculated leaves of transgenic tobacco ***plants*** expressing yeast-derived invertase.
AUTHOR(S): Baumert, A.; Mock, H.P.; Schmidt, J.; Herbers, K.; Sonnewald, U.; Strack, D.
AVAILABILITY: DNAL (450 P5622)
SOURCE: Phytochemistry, Mar 2001. Vol. 56, No. 6. p. 535-541
Publisher: Oxford : Elsevier Science Ltd.
CODEN: PYTCAS; ISSN: 0031-9422
NOTE: Includes references
PUB. COUNTRY: England; United Kingdom
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English

AB The patterns of secondary metabolites in leaves of ***yeast*** ***invertase*** -transgenic tobacco ***plants*** (Nicotiana tabacum L. cv. Samsun NN) were analyzed. ***Plants*** expressing cytosolic yeast-derived invertase (cytInv) or apoplastic (cell wall associated) ***yeast*** ***invertase*** (cwInv) showed a characteristic phytochemical phenotype compared to untransformed controls (wild-type ***plants***). The level of phenylpropanoids decreased in the cytInv ***plants*** but increased in the cwInv ***plants*** , which showed an induced de novo synthesis of a caffeic acid amide, i.e. N-caffeoylputrescine. In addition, the level of the coumarin glucoside scopolin was markedly enhanced. Increased accumulation of scopolin in the cwInv ***plants*** is possibly correlated with the induction of defense reactions and the appearance of necrotic lesions similar to the hypersensitive response caused by avirulent pathogens. This is consistent with results from potato virus Y-infected ***plants*** . Whereas there was no additional increase in the coumarins in leaves following infection in cwInv ***plants*** , wild-type ***plants*** showed a slight increase and cytInc a marked increase.

L8 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:267164 CAPLUS
DOCUMENT NUMBER: 135:31311
TITLE: Expression of a bacterial sucrose phosphorylase in potato tubers results in a glucose-independent induction of glycolysis
AUTHOR(S): Trethewey, R. N.; Fernie, A. R.; Bachmann, A.; Fleischer-Notter, H.; Geigenberger, P.; Willmitzer, L.
CORPORATE SOURCE: Max-Planck-Institut fur Molekulare Pflanzenphysiologie, Golm, 14476, Germany
SOURCE: Plant, Cell and Environment (2001), 24(3), 357-365
CODEN: PLCEDV; ISSN: 0140-7791
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Sugars are not only metabolic substrates: they also act as signals that regulate the metab. of ***plants*** . Previously, it was found that glycolysis is induced in transgenic tubers expressing a ***yeast*** ***invertase*** in the cytosol but not in those expressing invertase in the apoplast. This suggests that either the low level of sucrose, the increased formation of cytosolic glucose or the increased levels of metabolites downstream of the sucrose cleavage is responsible for the induction of glycolysis in storage organs. In order to discriminate between these possibilities, we cloned and expressed a bacterial sucrose phosphorylase gene from Pseudomonas saccharophila in potato tubers. Due to the phosphorolytic cleavage of sucrose, formation of glucose was circumvented, thus allowing assessment of the importance of cytosolic glucose - and, by implication, flux through hexokinase - in glycolytic induction. Expression of sucrose phosphorylase led to: (i) a decrease in sucrose content, but no decrease in glucose or fructose; (ii) a decrease in both starch accumulation and tuber yield; (iii) increased levels of glycolytic metabolites; (iv) an induction of the activities of key enzymes of glycolysis; and (v) increased respiratory activity. It is concluded that the induction of glycolysis in heterotrophic tissues such as potato tubers occurs via a glucose-independent mechanism.
REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 4 OF 33 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2000:452309 BIOSIS
DOCUMENT NUMBER: PREV200000452309
TITLE: Expression and secretion of scytalidopepsin B, an acid protease from Scytalidium lignicolum, in yeast.
AUTHOR(S): Shimuta, Ken; Oda-Ueda, Naoko; Washio, Masahiro; Oyama, Hiroshi; Oda, Kohei; Tsuru, Daisuke (1)
CORPORATE SOURCE: (1) Department of Applied Microbial Technology, Sojo University, Ikeda 4-22-1, Kumamoto, 860-0082 Japan
SOURCE: Bioscience Biotechnology and Biochemistry, (July, 2000) Vol. 64, No. 7, pp. 1542-1546. print.
ISSN: 0916-8451.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB An expression and secretion system for scytalidopepsin B, an acid protease from Scytalidium lignicolum, was constructed in yeast. Saccharomyces cerevisiae AH22 was ***transformed*** with an yeast-E. coli shuttle vector, pAM82, in which an ***yeast*** ***invertase*** signal segment and the cDNA encoding the pro- and mature enzyme regions were inserted. The ***transformant*** was found to secret a pepstatin-insensitive acid protease, when cultured aerobically in a low phosphate (Pi) medium. Amino terminal amino acid sequencing analysis indicated that the recombinant acid protease was accurately processed and secreted as a mature form.

L8 ANSWER 5 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:668731 CAPLUS
DOCUMENT NUMBER: 134:81474
TITLE: Consequences of the expression of a bacterial glucokinase in potato tubers, both in combination with and independently of a yeast-derived invertase
AUTHOR(S): Fernie, Alisdair R.; Riesmeier, Jorg W.; Martiny, Annette; Ramalingam, Sathishkumar; Willmitzer, Lothar; Trethewey, Richard N.
CORPORATE SOURCE: Max-Planck-Institut fur Molekulare Pflanzenphysiologie, Golm, 14476, Germany
SOURCE: Australian Journal of Plant Physiology (2000), 27(8/9), 827-833
CODEN: AJPPCH; ISSN: 0310-7841
PUBLISHER: CSIRO Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The aim of this work was to further define the metabolic factors that regulate carbohydrate metab. in potato (Solanum tuberosum L. cv. Desiree) tubers. The authors previously found that glycolysis is induced (and starch accumulation reduced) in transgenic tubers in which a ***yeast*** ***invertase*** and a glucokinase from Zymomonas mobilis were expressed in the cytosol, whereas potato tuber size is dramatically increased when invertase expression is targeted to the apoplast. Here, they describe the further characterization of potato tubers expressing a ***yeast*** ***invertase*** in the apoplast. The authors also report the generation of two novel transgenic ***plants*** in which the Z. mobilis glucokinase gene is expressed tuber-specifically (either in the wild type or apoplastic invertase-expressing background). They evaluated the influence that increasing the glucokinase activity, independent of

invertase activity, had on the shift in carbon partitioning, and assessed if the hexoses produced by the apoplastic cleavage of sucrose could be brought into metab. It was found that expression of glucokinase either in the wild type or in the apoplastic invertase-expressing background led to changes in the levels of glucose and glucose 6-phosphate. However, these changes had little effect on carbon partitioning or tuber size with respect to the parent line. It is concluded that neither the accumulation nor the phosphorylation of glucose play a pivotal role in the regulation of metab. or morphol. in the potato tuber.

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d l8 ibib ab 6-10

L8 ANSWER 6 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:397804 CAPLUS
DOCUMENT NUMBER: 133:132551
TITLE: ***Transformed*** potato ***plants*** as a model for studying the hormonal and carbohydrate regulation of tuberization
AUTHOR(S): Aksenova, N. P.; Konstantinova, T. N.; Golyanovskaya, S. A.; Kossmann, J.; Willmitzer, L.; Romanov, G. A.
CORPORATE SOURCE: Timiryazev Institute of Plant Physiology, Russian Academy of Sciences, Moscow, 127276, Russia
SOURCE: Russian Journal of Plant Physiology (Translation of Fiziologiya Rastenii (Moscow)) (2000), 47(3), 370-379
CODEN: RJPPE2; ISSN: 1021-4437
PUBLISHER: MAIK Nauka/Interperiodica Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Wild-type ***plants*** and several ***transformed*** genotypes of potato (Solanum tuberosum L., cv. Desiree) were used to investigate in vitro tuber formation. The ***transformed*** ***plants*** contained the following gene constructions: the rolB and rolC genes under the control of the B33 patatin promoter, which evoked the morphogenetic changes characteristic of phytohormones; the ***yeast*** ***invertase*** gene (inv) under the control of the B33 patatin promoter affecting the carbohydrate metab.; and the gene for ADP-glucose pyrophosphorylase (AGP) in the antisense orientation, under the control of the 35S cauliflower mosaic virus promoter. Double ***transformants*** were also used contg. various combinations of the above-listed genes. The control- ***transformants*** contained the GUS gene under the 35S promoter. Exogenous phytohormones and esp. sucrose promoted tuber formation. Tuber initiation and their subsequent growth were activated by various factors: cytokinin (kinetin) and sucrose at high concns. stimulated tuber initiation, while IAA and sucrose at a moderate concn. were favorable for tuber growth. Phytohormone effects were most pronounced at the lowest sucrose concn. still inducing tuberization. The ***transformed*** ***plants*** harboring the B33-rolC gene produced tubers at a higher range of sucrose concns. than the control ***transformants*** . Kinetin markedly stimulated tuber initiation by this genotype, but IAA did not accelerate tuber growth. In the B33-rolB and esp. the B33-inv ***plants*** , tuberization was started at a lower sucrose concn. Tuber formation by the 35S-aAGP ***plants*** was esp. active at a high (8%) sucrose concn. IAA did not substantially affect the

size of their tubers, and kinetin even reduced it. A comparison of in vitro tuber formation by the wild-type and transgenic ***plants*** can provide addnl. insights into the interaction between the hormonal and carbohydrate control of potato tuberization.
REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 7 OF 33 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2001:151061 BIOSIS
DOCUMENT NUMBER: PREV200100151061
TITLE: Nitrogen regulation of Saccharomyces cerevisiae invertase: Role of the URE2 gene.
AUTHOR(S): Silveira, Maria Cristina F.; Oliveira, Edna M. M.; Carvajal, Elvira; Bon, Elba P. S. (1)
CORPORATE SOURCE: (1) Instituto de Quimica, Universidade Federal do Rio de Janeiro, CEP 21949 900, Rio de Janeiro, RJ: elba1996@iq.ufrj.br Brazil
SOURCE: Applied Biochemistry and Biotechnology, (Spring, 2000) Vol. 84-86, pp. 247-254. print.
ISSN: 0273-2289.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB The regulation of extracellular enzymes is of great biotechnological interest. We studied the regulatory role of the URE2 gene on the periplasmic invertase of Saccharomyces cerevisiae, because its periplasmic asparaginase is regulated by the URE2/GLN3 system. Enzymatic activity was measured in the isogenic strains P40-1B, the ure2 mutant P40-3C, and the P40-3C strain ***transformed*** with the pIC-CS plasmid carrying the URE2 gene. The assays were performed using midlog and stationary phase cells and nitrogen-starved cells from these growth phases. During exponential growth, the level of invertase in both wild-type and ure2 mutant cells was comparable. However, the invertase activity in ure2 mutant cells from stationary phase was sixfold lower than in the wild-type cells. When P40-3C cells were ***transformed*** with the pIC-CS plasmid, the wild-type phenotype was restored. On nitrogen starvation in the presence of sucrose, the invertase activity in wild-type cells from midlog phase decreased three times, whereas in stationary cells, the activity decreased eight times. However, invertase activity doubled in ure2 mutant cells from both phases. When these cells were ***transformed*** with the aforementioned plasmid, the wild-type phenotype was restored, although a significant invertase decrease in stationary cells was not observed. These results suggested that the URE2 protein plays a role in invertase activity.

L8 ANSWER 8 OF 33 AGRICOLA DUPLICATE 3
ACCESSION NUMBER: 1999:76464 AGRICOLA
DOCUMENT NUMBER: IND22011495
TITLE: Delivery of a secreted soluble protein to the vacuole via a membrane anchor.
AUTHOR(S): Barrieu, F.; Chrispeels, M.J.
CORPORATE SOURCE: University of California, La Jolla.
AVAILABILITY: DNAL (450 P692)
SOURCE: Plant physiology, Aug 1999. Vol. 120, No. 4. p. 961-968
Publisher: Rockville, MD : American Society of Plant Physiologists, 1926-

CODEN: PLPHAY; ISSN: 0032-0889
NOTE: Includes references
PUB. COUNTRY: Maryland; United States
DOCUMENT TYPE: Article; Conference
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English

AB To further understand how membrane proteins are sorted in the secretory system, we devised a strategy that involves the expression of a membrane-anchored ***yeast*** ***invertase*** in transgenic ***plants*** . The construct consisted of a signal peptide followed by the coding region of ***yeast*** ***invertase*** and the transmembrane domain and cytoplasmic tail of calnexin. The substitution of a lysine near the C terminus of calnexin with a glutamic acid residue ensured progression through the secretory system rather than retention in or return to the endoplasmic reticulum. In the ***transformed*** ***plants*** , invertase activity and a 70-kD cross-reacting protein were found in the vacuoles. This ***yeast*** ***invertase*** had ***plant*** -specific complex glycans, indicating that transport to the vacuole was mediated by the Golgi apparatus. The microsomal fraction contained a membrane-anchored 90-kD cross-reacting polypeptide, but was devoid of invertase activity. Our results indicate that this membrane-anchored protein proceeds in the secretory system beyond the point where soluble proteins are sorted for secretion, and is detached from its membrane anchor either just before or just after delivery to the vacuole.

L8 ANSWER 9 OF 33 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 4
ACCESSION NUMBER: 1999:313074 CAPLUS
DOCUMENT NUMBER: 130:349770
TITLE: Tuber-specific expression of a ***yeast*** ***invertase*** and a bacterial glucokinase in potato leads to an activation of sucrose phosphate synthase and the creation of a sucrose futile cycle
AUTHOR(S): Trethewey, Richard N.; Riesmeier, Jorg W.; Willmitzer, Lothar; Stitt, Mark; Geigenberger, Peter
CORPORATE SOURCE: Max-Planck-Institut Molekulare Pflanzenphysiologie, Golm, D-14476, Germany
SOURCE: Planta (1999), 208(2), 227-238
CODEN: PLANAB; ISSN: 0032-0935
PUBLISHER: Springer-Verlag
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Fluxes were investigated in growing tubers from wild-type potato (Solanum tuberosum) and from ***transformants*** expressing a ***yeast*** ***invertase*** in the cytosol under the control of the tuber-specific patatin promoter either alone (EC 3.2.1.26; U-IN2-30) or in combination with a Zymomonas mobilis glucokinase (EC 2.7.1.2; GK3-38) by supplying radiolabeled [14C]sucrose, [14C]glucose or [14C]fructose to tuber disks for a 90-min pulse and subsequent chase incubations of 4 and 12 h, and by supplying [14C]fructose for 2 h and 4 h to intact tubers attached to the mother ***plant*** . Contrary to the expectation that this novel route for sucrose degrdn. would promote starch synthesis, the starch content decreased in the transgenic lines. Labeling kinetics did not reveal whether this was due to changes in the fluxes into or out of starch. However, they demonstrated that glycolysis is enhanced in the transgenic lines in comparison to the wild type. There was also a significant

stimulation of sucrose synthesis, leading to a rapid cycle of sucrose degrdn. and resynthesis. The labeling pattern indicated that sucrose phosphate synthase (SPS; EC 2.4.1.14) was responsible for the enhanced recycling of label into sucrose. In agreement, there was a 4-fold and 6-fold increase in the activation status of SPS in U-IN2-30 and GK3-38, resp., and expts. with protein phosphatase inhibitors indicated that this activation involves enhanced dephospporylation of SPS. It is proposed that this activation of SPS is promoted by the elevated glucose 6-phosphate levels in the transgenic tubers. These results indicate the pitfalls of metabolic engineering without a full appreciation of the metabolic system and regulatory circuits present in the tissue under investigation.

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 10 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:202042 CAPLUS
DOCUMENT NUMBER: 130:262837
TITLE: Morphology and tuber formation of in vitro-grown potato ***plants*** harboring the ***yeast*** ***invertase*** gene and/or the rolC gene
AUTHOR(S): Romanov, G. A.; Konstantinova, T. N.; Sergeeva, L. I.; Golyanovskaya, S. A.; Kossmann, J.; Willmitzer, L.; Schmuelling, T.; Aksenova, N. P.
CORPORATE SOURCE: Institute Plant Physiology, Moscow, 127276, Russia
SOURCE: Plant Cell Reports (1998), 18(3-4), 318-324
CODEN: PCRPD8; ISSN: 0721-7714
PUBLISHER: Springer-Verlag
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Growth and tuber formation of transgenic potato ***plants*** (Solanum tuberosum cv. Desiree) harboring the ***yeast*** ***invertase*** gene and the rolC gene individually or in combination under the transcriptional control of the patatin promoter were investigated under different conditions in vitro. ***Plants*** expressing only the invertase gene were morphol. similar to control ***plants*** . RolC transgenic ***plants*** had an increased tiller no., improved root growth, and a higher total biomass. Tuber formation and growth were altered by the introduced transgenes. The sucrose requirement to induce tubers was shifted to lower or higher concns. for invertase- or rolC-expressing clones, resp. In addn., rolC ***plants*** formed tubers of altered morphol. A comparison with soil-grown ***plants*** showed that morphol. parameters can be predicted to some extent from in vitro studies, while for reliable prescreening of parameters concerning tuber formation and growth, an optimization of currently used protocols is necessary.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d l8 ibib ab 11-15

L8 ANSWER 11 OF 33 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1998:369284 BIOSIS
DOCUMENT NUMBER: PREV199800369284
TITLE: Combined expression of glucokinase and invertase in potato tubers leads to a dramatic reduction in starch accumulation

and a stimulation of glycolysis.

AUTHOR(S): Trethewey, Richard N. (1); Geigenberger, Peter; Riedel, Kerstein; Hajirezaei, Mohammad-Reza; Sonnewald, Uwe; Stitt, Mark; Riesmeier, Joerg W.; Willmitzer, Lothar

CORPORATE SOURCE: (1) Max-Planck-Inst. Mol. Pflanzenphysiol., Karl Liebknecht Str. 25, 14476 Golm Germany

SOURCE: Plant Journal, (July, 1998) Vol. 15, No. 1, pp. 109-118. ISSN: 0960-7412.

DOCUMENT TYPE: Article

LANGUAGE: English

AB The original aim of this work was to increase starch accumulation in potato tubers by enhancing their capacity to metabolise sucrose. We previously reported that specific expression of a ***yeast*** ***invertase*** in the cytosol of tubers led to a 95% reduction in sucrose content, but that this was accompanied by a larger accumulation of glucose and a reduction in starch. In the present paper we introduced a bacterial glucokinase from Zymomonas mobilis into an invertase-expressing transgenic line, with the intention of bringing the glucose into metabolism. Transgenic lines were obtained with up to threefold more glucokinase activity than in the parent invertase line and which did not accumulate glucose. Unexpectedly, there was a further dramatic reduction in starch content, down to 35% of wild-type levels. Biochemical analysis of growing tuber tissue revealed large increases in the metabolic intermediates of glycolysis, organic acids and amino acids, two- to threefold increases in the maximum catalytic activities of key enzymes in the respiratory pathways, and three- to five-fold increases in carbon dioxide production. These changes occur in the lines expressing invertase, and are accentuated following introduction of the second transgene, glucokinase. We conclude that the expression of invertase in potato tubers leads to an increased flux through the glycolytic pathway at the expense of starch synthesis and that heterologous overexpression of glucokinase enhances this change in partitioning.

L8 ANSWER 12 OF 33 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1997:172569 CAPLUS

DOCUMENT NUMBER: 126:169263

TITLE: Transgenic ***plants*** and ***plant*** parts with enhanced glycolysis

INVENTOR(S): Trethewey, Richard; Riesmeier, Joerg; Willmitzer, Lothar

PATENT ASSIGNEE(S): Institut fuer Genbiologische Forschung Berlin Gmbh, Germany

SOURCE: Ger. Offen., 14 pp.
CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19529696	A1	19970213	DE 1995-19529696	19950811
CA 2229061	AA	19970227	CA 1996-2229061	19960808
WO 9707221	A1	19970227	WO 1996-EP3514	19960808

W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU,

SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ,
BY, KG, KZ, MD, RU, TJ, TM
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR,
IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM

AU 9668204	A1	19970312	AU 1996-68204	19960808
AU 719452	B2	20000511		
EP 846180	A1	19980610	EP 1996-928432	19960808
R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, NL				
CN 1196090	A	19981014	CN 1996-196914	19960808
BR 9610227	A	19991221	BR 1996-10227	19960808
JP 2001506123	T2	20010515	JP 1997-508915	19960808

PRIORITY APPLN. INFO.: DE 1995-19529696 A 19950811
WO 1996-EP3514 W 19960808

AB Enhancement of glycolysis is carried out by introduction and expression of DNA sequences coding for an invertase and a hexokinase, preferably deregulated and unregulated. Thus, a transgenic potato is described, which expresses in the tuber a ***yeast*** ***invertase*** and a glucokinase from Zymomonas mobilis. The plasmid pB33Hyg-GK, used for the ***transformation*** , is described.

L8 ANSWER 13 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:492040 CAPLUS
DOCUMENT NUMBER: 127:202984
TITLE: Increased potato tuber size resulting from apoplastic expression of a ***yeast*** ***invertase***
AUTHOR(S): Sonnewald, Uwe; Hajirezaei, Mohammad-Reza; Kossmann, Jens; Heyer, Arnd; Trethewey, Richard N.; Willmitzer, Lothar
CORPORATE SOURCE: Institut Genbiologische Forschung Berlin GmbH, Berlin, 14195, Germany
SOURCE: Nature Biotechnology (1997), 15(8), 794-797
CODEN: NABIF9; ISSN: 1087-0156
PUBLISHER: Nature America
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The role of sucrose cleavage in detg. sink strength in potato was investigated by generating transgenic potato ***plants*** that expressed a ***yeast*** ***invertase*** in either the cytosol or apoplast of tubers. Cytosolic localization gave rise to a redn. in tuber size and an increase in tuber no. per ***plant*** , whereas apoplastic targeting led to an increase in tuber size and a decrease in tuber no. per ***plant*** . Sink organ size can be manipulated through modification of
sucrose metab.

L8 ANSWER 14 OF 33 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 5
ACCESSION NUMBER: 1998:189431 CAPLUS
DOCUMENT NUMBER: 128:255200
TITLE: Analysis of growth, composition and thickness of the cell walls of transgenic tobacco ***plants*** expressing a yeast-derived invertase
AUTHOR(S): Hoffmann-Benning, S.; Willmitzer, L.; Fisahn, J.
CORPORATE SOURCE: Institut fur Genbiologische Forschung Berlin GmbH, Berlin, Germany
SOURCE: Protoplasma (1997), 200(3-4), 146-153
CODEN: PROTA5; ISSN: 0033-183X
PUBLISHER: Springer-Verlag Wien

DOCUMENT TYPE: Journal
LANGUAGE: English
AB Transgenic tobacco (Nicotiana tabaccum L. cv. Samsun NN) expressing a ***yeast*** ***invertase*** in the vacuole provides a novel tool for studying the role of turgor, osmotic pressure, and cell wall properties during cell expansion. The ***plants*** used showed increased osmolarity and an increased cell size in young leaves. Their advantage is that they allow long-term anal. and undisturbed conditions. Cell expansion rate was maximal in leaf six of the transgenic ***plants*** and in leaf of eleven of wild-type ***plants*** . Turgor rose to 0.52 .+-. 0.04 MPa (n = 45) and 0.35 .+-. 0.03 MPa (n = 45) in transgenic and wild-type ***plants*** , resp. It was maximal where elongation rates were highest. Thus, elevated cell expansion rate was, at least in part, related to an enhancement in turgor. However, comparison between turgor and relative expansion rates showed that higher turgor pressures were required to achieve similar cell expansion rates in ***transformed*** ***plants*** as in the wild-type. This finding underlines the importance of the yield threshold and, thus, of the cell wall in growth regulation. This conclusion is further supported by the observation that the cell walls of transgenic ***plants*** were up to 77% thicker than the wild-type, but not qual. modified.

L8 ANSWER 15 OF 33 AGRICOLA DUPLICATE 6
ACCESSION NUMBER: 1998:13367 AGRICOLA
DOCUMENT NUMBER: IND20617150
TITLE: Solute accumulation and decreased photosynthesis in leaves of potato ***plants*** expressing yeast-derived invertase either in the apoplast, vacuole or cytosol.
AUTHOR(S): Bussis, D.; Heineke, D.; Sonnewald, U.; Willmitzer, L.; Raschke, K.; Heldt, H.W.
CORPORATE SOURCE: Australian National University, Canberra, ACT, Australia.
SOURCE: Planta, 1997. Vol. 202, No. 1. p. 126-136
Publisher: Berlin ; New York : Springer-Verlag, 1925-
CODEN: PLANAB; ISSN: 0032-0935
NOTE: Includes references
PUB. COUNTRY: Germany
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English
AB Potato (Solanum tuberosum cv. Desiree) ***plants*** expressing ***yeast*** ***invertase*** directed either to the apoplast, vacuole or cytosol were biochemically and physiologically characterised. All lines of transgenic ***plants*** showed similarities to ***plants*** growing under water stress. ***Transformants*** were retarded in growth, and accumulated hexoses and amino acids, especially proline, to levels up to 40-fold higher than those of the wild types. In all ***transformants*** rates of CO2 assimilation and leaf conductance were reduced. From the unchanged intercellular partial pressure of CO2 and apoplastic cis-abscisic acid (ABA) content of ***transformed*** leaves it was concluded that the reduced rate of CO2 assimilation was not caused by a limitation in the availability of CO2 for the ribulose-1,5-bisphosphate carboxylase-oxygenase (Rubisco). In the ***transformants*** the amount of Rubisco protein was not reduced, but both activation state

and carboxylation efficiency of photosynthesis were lowered. In vacuolar and cytosolic ***transformants*** this inhibition of Rubisco might be caused by a changed ratio of organic bound and inorganic phosphate, as indicated by a doubling of phosphorylated intermediates. But in apoplastic ***transformants*** the pattern of phosphorylated intermediates resembled that of leaves of water-stressed potato ***plants*** , although the cause of inhibition of photosynthesis was not identical. Whereas in water-stressed ***plants*** increased contents of the phytohormone ABA are supposed to mediate the adaptation to water stress, no contribution of ABA to reduction of photosynthesis could be detected in invertase ***transformants*** .

=> d l8 ibib ab 16-20

L8 ANSWER 16 OF 33 AGRICOLA DUPLICATE 7
ACCESSION NUMBER: 97:35376 AGRICOLA
DOCUMENT NUMBER: IND20566333
TITLE: The vacuolar targeting signal of the 2S albumin from Brazil nut resides at the C terminus and involves the C-terminal propeptide as an essential element.
AUTHOR(S): Saalbach, G.; Rosso, M.; Schumann, U.
CORPORATE SOURCE: Institut fur Pflanzengenetik und Kulturpflanzenforschung, Gatersleben, Germany.
AVAILABILITY: DNAL (450 P692)
SOURCE: Plant physiology, Nov 1996. Vol. 112, No. 3. p. 975-985
Publisher: Rockville, MD : American Society of Plant Physiologists, 1926-
CODEN: PLPHAY; ISSN: 0032-0889
NOTE: Includes references
PUB. COUNTRY: Maryland; United States
DOCUMENT TYPE: Article; Conference
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English
AB Genetic constructs in which different N- and C-terminal segments of Brazil nut (Bertholletia excelsa H.B.K.) 2S albumin were fused to secretory ***yeast*** ***invertase*** were ***transformed*** into tobacco (Nicotiana tabacum) ***plants*** to investigate the vacuolar targeting signal of the 2S albumin. None of the N-terminal segments, including the complete precursor containing all propeptides, was able to direct the invertase to the vacuoles. However, a short C-terminal segment comprising the last 20 amino acids of the precursor was sufficient for efficient targeting of ***yeast*** ***invertase*** to the vacuoles of the ***transformed*** tobacco ***plants*** . Further analyses showed that peptides of 16 and 13 amino acids of the C-terminal segment were still sufficient, although they had slightly lower efficiency. When segments of 9 amino acids or shorter were analyzed, a decrease to approximately 30% was observed. These segments included the C-terminal propeptide of four amino acids (Ile-Ala-Gly-Phe). When the 2S albumin was expressed in tobacco, it was also localized to the vacuoles of mesophyll cells. If the C-terminal propeptide was deleted from the 2S albumin precursor, all of this truncated 2S albumin was secreted from the tobacco cells. These results indicate that the C-terminal propeptide is necessary but not sufficient for vacuolar targeting. In addition, an adjacent segment of at least 12 amino acids of the mature protein is needed to form the complete

signal for efficient targeting.

L8 ANSWER 17 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1996:337734 CAPLUS
DOCUMENT NUMBER: 125:2942
TITLE: Systemic acquired resistance mediated by the ectopic expression of invertase: possible hexose sensing in the secretory pathway
AUTHOR(S): Herbers, Karin; Meuwly, Philippe; Frommer, Wolf B.; Metraux, Jean-Pierre; Sonnewald, Uwe
CORPORATE SOURCE: Inst. Pflanzengenetik Kulturpflanzenforschung, Gatersleben, 06466, Germany
SOURCE: Plant Cell (1996), 8(5), 793-803
CODEN: PLCEEW; ISSN: 1040-4651
PUBLISHER: American Society of Plant Physiologists
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Systemic acquired resistance (SAR) has been reported to be assocd. with lesion-mimic mutants. Tobacco ***plants*** expressing vacuolar and apoplastic yeast-derived invertase (vacInv and cwInv, resp.) develop spontaneous necrotic lesions similar to hypersensitive responses caused by avirulent pathogens. Therefore, SAR and metabolic alterations leading to the activation of defense-related responses were studied in these ***plants*** . Defense-related gene transcripts, callose content, peroxidase activities, and levels of salicylic acid were elevated. The defense reactions were accompanied by increased resistance toward potato virus Y and were measured as decreased viral spreading and reduced multiplication in systemic leaves of the transgenic ***plants*** . Interestingly, the accumulation of pathogenesis-related (PR) protein transcripts (PR-Q) and repression of photosynthetic gene transcripts (chlorophyll a/b binding protein) were inversely correlated and required the same threshold level of hexoses for induction and repression. Expression of a cytosolic yeast-derived invertase in transgenic tobacco ***plants*** with equally increased levels of sugars neither displayed SAR responses nor showed decreased levels of photosynthetic genes. Apparently, hexose sensing in the secretory pathway is essential for mediating the activation of defense-related genes as well as repression of photosynthetic genes in vaclnv and cwlnv ***plants*** .

L8 ANSWER 18 OF 33 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 8
ACCESSION NUMBER: 1996:108296 CAPLUS
DOCUMENT NUMBER: 124:141374
TITLE: The role of sugar accumulation in leaf frost hardiness - investigations with transgenic tobacco expressing a bacterial pyrophosphatase or a ***yeast*** ***invertase*** gene
AUTHOR(S): Hincha, Dirk K.; Sonnewald, Uwe; Willmitzer, Lothar; Schmitt, Juergen M.
CORPORATE SOURCE: Institut Pflanzenphysiologie Mikrobiologie, Freie Universitaet, Berlin, D-14195, Germany
SOURCE: Journal of Plant Physiology (1996), 147(5), 604-10
CODEN: JPPHEY; ISSN: 0176-1617
PUBLISHER: Fischer
DOCUMENT TYPE: Journal
LANGUAGE: English
AB In order to assess the contribution of increased leaf osmolality to ***plant*** frost hardiness, transgenic tobacco (Nicotiana tabacum)

plants that accumulate sol. carbohydrates were used. The leaves from ***plants*** of the clone U-pps-1-10 expressing a bacterial pyrophosphatase gene displayed an increase in frost hardiness of 1.2.degree. when compared with wild type control ***plants*** . Most strikingly, these ***plants*** showed a higher capacity to increase their hardiness during exposure to 4.degree. growth temp. for 10 to 14 days; frost hardiness increased by 1.1.degree. in transgenic ***plants*** as compared with 0.2.degree. in wild type controls. Of the other three independent clones ***transformed*** with the pyrophosphatase gene, none showed a statistically significant increase in hardiness compared with wild type ***plants*** , or increased hardiness after cold acclimation. There was no correlation between leaf osmolality and hardiness when leaves from cold acclimated and from non-acclimated wild type and all clones of ***transformed*** tobacco were compared. Tobacco ***plants*** expressing an apoplastic ***yeast*** ***invertase*** gene were more susceptible to freeze-thaw stress than wild type controls, in spite of increased leaf osmolality due to sugar accumulation in the leaf cells. Cold acclimation of such ***plants*** resulted in increased frost hardiness, which, however, did not exceed the hardiness of untransformed controls. When the expressed invertase gene contained a signal sequence for targeting the protein to the vacuole only moderate increases in leaf osmolality were obtained. None of the three independent clones investigated showed improved frost hardiness compared with the wild type.

L8 ANSWER 19 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1996:46353 CAPLUS
DOCUMENT NUMBER: 124:82436
TITLE: Developmental changes of antioxidative systems in tobacco leaves as affected by limited sucrose export in transgenic ***plants*** expressing ***yeast*** - ***invertase*** in the apoplastic space
AUTHOR(S): Polle, Andrea
CORPORATE SOURCE: Inst. Forstbotanik Baumphysiol., Albert-Ludwigs-Univ. Freiburg, Freiburg, D-79085, Germany
SOURCE: Planta (1996), 198(2), 253-62
CODEN: PLANAB; ISSN: 0032-0935
PUBLISHER: Springer
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A restricted export of carbohydrates from source leaves causes oxidative stress because of an enhanced utilization of O2 instead of NADP+ as electron acceptor in photosynthesis. To test this hypothesis, developmental changes of antioxidative systems were investigated in wild-type and transgenic tobacco (Nicotiana tabacum L.) suffering from disturbed sink-source relations by expression of ***yeast*** ***invertase*** in the apoplastic space. Young expanding leaves of the wild type contained higher activities of superoxide dismutase (EC 1.15.1.1), ascorbate peroxidase (EC 1.11.1.11), catalase (EC 1.11.1.6), dehydroascorbate reductase (EC 1.8.5.1), glutathione reductase (EC 1.6.4.2) and a higher glutathione content than mature source leaves. The activity of monodehydroascorbate-radical reductase (EC 1.1.5.4) and the ascorbate content remained unaffected by the developmental stage in the wild type. In young expanding leaves of the transgenic ***plants*** the capacity of the antioxidative systems was similar to or higher than in

corresponding leaves from the wild type. Source leaves of transgenic tobacco with an increased carbohydrate content showed a small chlorophyll loss, an increased malondialdehyde content, a selective loss of the activities of Cu/Zn-superoxide dismutase isoenzymes and a fourfold decrease in ascorbate compared with the wild type. There was no evidence that the protection from H2O2 was insufficient since source leaves of transgenic tobacco contained increased activities of catalase, ascorbate peroxidase, and monodehydroascorbate-radical reductase and an increased ascorbate-to-dehydroascorbate ratio compared with source leaves of the wild type. In severely chlorotic leaf sections of the transgenic ***plants*** , most components of the antioxidative system were lower than in green leaf sections, but the ascorbate-to-dehydroascorbate ratio was increased. Thus, carbohydrate-accumulating cells have an increased availability of reductant, which can increase the degree of redn. of the ascorbate system via glutathione-related systems or via the activity of monodehydroascorbate-radical reductase. At the same time, transgenic tobacco leaves seem to suffer from an increased oxidative stress, presumably as a result of a decreased consumption of O2.bul.- by Cu/Zn-superoxide dismutases in the chloroplasts. There was no evidence that carbohydrate-accumulating leaves acclimated to enhanced O2.bul.- prodn. rates in the chloroplasts.

L8 ANSWER 20 OF 33 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1995:205954 BIOSIS
DOCUMENT NUMBER: PREV199598220254
TITLE: Golgi localization in yeast is mediated by the membrane anchor region of rat liver sialyltransferase.
AUTHOR(S): Schwientek, Tilo; Lorenz, Claudia; Ernst, Joachim F. (1)
CORPORATE SOURCE: (1) Inst. Mikrobiol., Heinrich-Heine-Univ., Universitaetsstr. 1/26.12, D-40225 Duesseldorf Germany
SOURCE: Journal of Biological Chemistry, (1995) Vol. 270, No. 10, pp. 5483-5489.
ISSN: 0021-9258.
DOCUMENT TYPE: Article
LANGUAGE: English
AB To investigate the function of the membrane anchor region of a mammalian glycosyltransferase in yeast we constructed a fusion gene that encodes the 34 amino-terminal residues of rat liver beta-galactoside alpha-2,6-sialyltransferase (EC 2.4.99.1) (ST) fused to the mature form of ***yeast*** ***invertase*** . ***Transformants*** of Saccharomyces cerevisiae expressing the fusion gene produced an intracellular heterogeneously N-glycosylated fusion protein of intermediate molecular weight between the core and fully extended N-glycosylated form of invertase, suggesting a post-endoplasmic reticulum (ER) localization. In two types of cell fractionation using sucrose density gradients the ST-invertase fusion protein cofractionated with Golgi marker proteins, whereas a minor fraction (about 30%) comigrated with a vacuolar marker; ST-invertase was not detected in other cell fractions including the ER and the plasma membrane. Consistent with Golgi localization, about 70% of the total amount of the ST-invertase fusion was immunoprecipitated with an antibody directed against alpha-1,6-mannose linkages. The results demonstrate that the membrane anchor region of a mammalian type H glycosyltransferase is able to target a protein to the secretory pathway and to a Golgi compartment of the yeast S. cerevisiae, indicating conservation of targeting mechanisms between higher and lower eukaryotes. Since typical yeast Golgi localization signals are missing in the ST-membrane anchor region the results also suggest that yeast as

mammalian cells utilize diverse mechanisms to direct proteins to the Golgi.

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L9 0 L8 AND MAIZE

=> d l8 ibib ab 21-25

L8 ANSWER 21 OF 33 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1994:489878 BIOSIS
DOCUMENT NUMBER: PREV199497502878
TITLE: Kex2-dependent invertase secretion as a tool to study the targeting of transmembrane proteins which are involved in ER fwdarw Golgi transport in yeast.
AUTHOR(S): Boehm, Johannes; Ulrich, Helle D.; Ossig, Rainer; Schmitt, Hans Dieter (1)
CORPORATE SOURCE: (1) Dep. Mol. Genetics, Max-Planck-Inst. Biophysical Chem., PO Box 2841, 37018 Goettingen Germany
SOURCE: EMBO (European Molecular Biology Organization) Journal, (1994) Vol. 13, No. 16, pp. 3696-3710.
ISSN: 0261-4189.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Mutants were isolated that are defective in the retention of a transmembrane protein in the early secretory compartments in yeast. A series of hybrid proteins was tested for their use in the selection of such mutants. Each of these hybrid proteins consisted of a type II transmembrane protein (N-in/C-out) and invertase (Suc2) as a reporter separated by a peptide linker containing a cleavage site for the Golgi protease Kex2. The integral membrane proteins which were used-Sec12p, Sec22/Sly2p or Bet1/Sly12p-are all known to be required for ER fwdarw Golgi transport in ***yeast*** . ***Invertase*** was readily cleaved from the fusions containing Sec22/Sly2p or Bet1/Sly12p as the membrane anchoring part. In contrast, Sec12-invertase expressing ***transformants*** required mutations in either of two different genes for Kex2-dependent invertase secretion. The mutant showing the stronger retention defect (rer1) was used to clone the corresponding gene. RER1 represents the first reading frame left of the centromere of chromosome III. Cells carrying a disruption of the RER1 gene are viable and show the same mislocalizing phenotype as the original mutants. The Rer1 protein, as deduced from the nucleotide sequence, contains four transmembrane domains. It has been suggested before that Sec12p cycles between the ER and the cis-Golgi compartment. Some results obtained by using Sec12-invertase and the rer1 mutants resemble observations on the retention of Golgi-resident glycosyltransferases and viral proteins in mammalian cells. For instance, retention of Sec12-invertase is non-saturable and the membrane-spanning domain of Sec12p seems to constitute an important targeting signal.

L8 ANSWER 22 OF 33 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1994:449841 BIOSIS
DOCUMENT NUMBER: PREV199497462841
TITLE: A carboxyl-terminal ***plant*** vacuolar targeting signal is not recognized by yeast.
AUTHOR(S): Gal, Susannah; Raikhel, Natash V. (1)
CORPORATE SOURCE: (1) MSU-DOE Plant Res. Lab., East Lansing, MI 48824-1312 USA

SOURCE: Plant Journal, (1994) Vol. 6, No. 2, pp. 235-240.
ISSN: 0960-7412.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Three different classes of signals for ***plant*** vacuolar targeting have been defined. Previous work has demonstrated that the carboxyl-terminal propeptide (CTPP) of barley lectin (BL) is a vacuolar targeting signal in tobacco ***plants*** . When a mutant BL protein lacking the CTPP is expressed in tobacco, the protein is secreted. In an effort to determine the universality of this signal, the CTPP was tested for its ability to target proteins to the vacuole of Saccharomyces cerevisiae. Genes encoding fusion proteins between the yeast secreted protein invertase and BL domains were synthesized and ***transformed*** into an invertase deletion mutant of ***yeast*** . ***Invertase*** assays on intact and detergent-solubilized cells demonstrated that invertase+CTPP was secreted, while nearly 90% of the invertase::BL+CTPP (fusion protein between invertase and BL containing the CTPP) and invertase::BL-CTPP proteins (fusion between invertase and BL lacking the CTPP) were retained intracellularly. These fusions were secreted in a mutant of yeast that normally secretes proteins targeted to the vacuole. With this and previous work, proteins representing all three classes of ***plant*** vacuolar targeting signals have now been tested in yeast, and in all cases, the experiments indicate that the ***plant*** proteins are directed to the yeast vacuole using signals other than those recognized by ***plants*** .

L8 ANSWER 23 OF 33 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1994:298972 BIOSIS
DOCUMENT NUMBER: PREV199497311972
TITLE: Expression of soluble active human beta-1,4 galactosyltransferases in Saccharomyces cerevisiae.
AUTHOR(S): Kleene, Ralf; Krezdorn, Christian H.; Watzele, Gabriele; Meyhack, Bernd; Herrmann, Guido F.; Wandrey, Christian; Berger, Eric G. (1)
CORPORATE SOURCE: (1) Physiol. Inst., Univ. Zurich, Winterthurerstr. 190, CH-8057 Zurich Switzerland
SOURCE: Biochemical and Biophysical Research Communications, (1994) Vol. 201, No. 1, pp. 160-167.
ISSN: 0006-291X.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Sequences coding for the cytoplasmic and transmembrane domains were removed from the cDNA of the human Golgi resident membrane protein beta-1,4 galactosyltransferase (gal-T). The remaining sequences coding for the stem and catalytical domains of this glycosyltransferase were fused to sequences coding for the ***yeast*** ***invertase*** signal sequence. The hybrid was inserted together with a constitutive yeast promoter and a terminator into a E. coli/yeast shuttle vector. Saccharomyces cerevisiae strain BT150 ***transformed*** with this new expression vector expressed enzymically active soluble enzyme, whereas no activity was detectable in mock- ***transformed*** yeasts. The enzyme product was identified by HPLC analysis and shown to correspond to the expected product N-acetyllactosamine.

L8 ANSWER 24 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:215765 CAPLUS
DOCUMENT NUMBER: 120:215765

TITLE: Transgenic potatoes with suppression of tuber sprouting
INVENTOR(S): Von Schaewen, Antje; Sonnewald, Uwe; Willmitzer, Lothar
PATENT ASSIGNEE(S): Institut fuer Genbiologische Forschung Berlin Gmbh, Germany
SOURCE: Ger. Offen., 7 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 4213444	A1	19931028	DE 1992-4213444	19920418

AB Transgenic potato ***plants*** are prepd. in which sprouting of the tubers during storage is suppressed by lowering the sucrose concn. through a decrease in the activity of starch-degrading enzymes and/or an increase in sucrose degrdn. The ***plants*** are ***transformed*** e.g. with DNA contg. an invertase gene in the sense orientation and a gene for amylase, starch phosphorylase, maltase, maltose phosphorylase, UDPG pyrophosphorylase, sucrose phosphate synthase, or sucrose phosphate phosphatase in the antisense orientation. Thus, potato ***plants*** were ***transformed*** with an Agrobacterium tumefaciens vector contg. plasmid p35S-CW-INV. This plasmid contained a constitutive promoter from cauliflower mosaic virus, a portion of a potato proteinase inhibitor II gene fused to the invertase (suc2) gene from yeast and a signal peptide sequence, and a polyadenylation signal. The regenerated potato ***plants*** showed a >100-fold increase in acid invertase activity, a 20-fold decrease in sucrose concn., and a 20-fold increase in glucose and fructose content in the apoplastic space.

L8 ANSWER 25 OF 33 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1993:274291 BIOSIS
DOCUMENT NUMBER: PREV199396004516
TITLE: The expression hemolytically active human complement protein C9 in mammalian, insect and yeast cells.
AUTHOR(S): Tomlinson, Stephen; Ueda, Etsuko; Maruniak, James E.; Garcia-Canedo, Alejandra; Bjes, Edward S.; Esser, Alfred F. (1)
CORPORATE SOURCE: (1) Sch. Biological Sci., Univ. Missouri-Kansas City, 5100 Rockhill Rd., Kansas City, MO 64110
SOURCE: Protein Expression and Purification, (1993) Vol. 4, No. 2, pp. 141-148.
ISSN: 1046-5928.
DOCUMENT TYPE: Article
LANGUAGE: English

AB The cDNa sequence encoding mature human C9 protein and its signal peptide was cloned into three expression vectors for expression in COS-7 (mammalian), Spodoptera frugiperda IPLB-SF-21AE (insect), and Saccharomyces cerevisiae (yeast) cells. In addition, C9 cDNA encoding only the mature protein was fused to the ***yeast*** ***invertase*** leader sequence (SU2) and cloned for expression in yeast. Under optimal conditions COS-7 and IPLB-SF-21AE cells secreted recombinant C9 (rC9) at concentrations of about 111 and 700 ng C9/ml culture supernatant, respectively. By comparison S. cervisiae, whether ***transformed***

with C9 cDNA containing its native or ***yeast*** ***invertase*** leader sequence, secreted only very small amounts of rC9 (5-10 nb/ml). However, upon lysis concentrations of up to 500 ng/mg dry wt were found in yeast cells ***transformed*** with C9 cDNA. SDS-PAGE followed by Western blot analysis revealed COS-7 cell and S. cerevisiae expressed rC9 to have a MW similar to that of native C9 purified from human serum, while rC9 from IPLB-SF-21AE cells was about 4 kDa smaller. No hemolytic activity of S. cerevisiae secreted rC9 could be detected and the specific hemolytic activity of S. cerevisiae intracellular rC9 was also very low. However, the specific hemolytic activities of COS-7 and IPLB-SF-21AE secreted rC9 were indistinguishable from that of purified native human C9. Thus, for future studies on the structure and function of C9 where the production of large quantities of mutant protein would be desirable, the baculovirus-insect cell expression system appears to offer considerable advantages.

=> d l8 ibib ab 26-33

L8 ANSWER 26 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1992:401978 CAPLUS
DOCUMENT NUMBER: 117:1978
TITLE: Multiple-copy integration of the .alpha.-galactosidase gene from Cyamopsis tetragonoloba into the ribosomal DNA of Kluyveromyces lactis
AUTHOR(S): Bergkamp, Ronald J. M.; Kool, Ingrid M.; Geerse, Ruud H.; Planta, Rudi J.
CORPORATE SOURCE: Lab. Biochem. Mol. Biol., Vrije Univ., Amsterdam, NL-1081 HV, Neth.
SOURCE: Current Genetics (1992), 21(4-5), 365-70
CODEN: CUGED5; ISSN: 0172-8083
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A vector system was developed for high-copy-no. integration into the ribosomal DNA of the yeast K. lactis. This system is analogous to the pMIRY-system developed for Saccharomyces cerevisiae. Plasmids contg. a portion of K. lactis rRNA-specifying DNA for targeted homologous recombination, as well as the S. cerevisiae TRP1 gene with various promoter deletions, were constructed and, after ***transformation*** of K. lactis, analyzed for both copy no. and stability. These plasmids were found to be present in about 60 copies per cell and were stably maintained during growth under non-selective conditions. Using this vector system, a fusion construct contg. the S. cerevisiae GAL7 promoter, the SUC2 (invertase) signal sequence and the gene coding for .alpha.-galactosidase from the ***plant*** C. tetragonoloba was expressed. Although the max. copy no. of these integrated plasmids was only about 15, a high level of .alpha.-galactosidase prodn. (250 mg/L) was nevertheless achieved with a secretion efficiency of about 95%. When compared to extrachromosomal K. lactis vectors contg. the same fusion construct, the multicopy integrants showed a much higher .alpha.-galactosidase prodn. level and a considerably higher stability under non-selective conditions.

L8 ANSWER 27 OF 33 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 9
ACCESSION NUMBER: 1992:484392 CAPLUS
DOCUMENT NUMBER: 117:84392
TITLE: Expression and secretion of pea-seed lipoxygenase

isoenzymes in Saccharomyces cerevisiae
AUTHOR(S): Knust, Birgitt; Von Wettstein, Diter
CORPORATE SOURCE: Dep. Physiol., Carlsberg Lab., Copenhagen Valby, DK-2500, Den.
SOURCE: Applied Microbiology and Biotechnology (1992), 37(3), 342-51
CODEN: AMBIDG; ISSN: 0175-7598
DOCUMENT TYPE: Journal
LANGUAGE: English
AB To explore the characteristics of the individual pea lipoxygenase isoenzymes in more detail, large amts. of the pure enzymes are needed and their prodn. in a heterologous host is therefore desirable. Full-length cDNAs encoding pea seed lipoxygenase isoenzymes 2 and 3 were expressed in S. cerevisiae with the aid of yeast-Escherichia coli shuttle vectors. Expression of the cDNA for lipoxygenase 2 under the control of the constitutive phosphoglycerate kinase (PGK) gene promoter yielded significant amts. of active enzyme inside the cell, both with yeast ***transformants*** carrying the cDNA gene on high-copy-no. plasmids or integrated in chromosome V. Addn. of the ***yeast*** ***invertase*** signal sequence in front of the pea lipoxygenase 3 yielded secreted active pea seed lipoxygenase in the medium, but large amts. of inactive lipoxygenase 3 remained inside the yeast cell. Expression of the LOX3 cDNA can be achieved either constitutively with the PGK promoter or inducibly with the GAL1 promoter.

L8 ANSWER 28 OF 33 AGRICOLA DUPLICATE 10
ACCESSION NUMBER: 94:3006 AGRICOLA
DOCUMENT NUMBER: IND20361838
TITLE: Apoplastic expression of yeast-derived invertase in potato: effects on photosynthesis, leaf solute composition, water relations, and tuber composition.
AUTHOR(S): Heineke, D.; Sonnewald, U.; Bussis, D.; Gunter, G.; Leidreiter, K.; Wilke, I.; Raschke, K.; Willmitzer, L.; Heldt, H.W.
AVAILABILITY: DNAL (450 P692)
SOURCE: Plant physiology, Sept 1992. Vol. 100, No. 1. p. 301-308
Publisher: Rockville, MD : American Society of Plant Physiologists, 1926-
CODEN: PLPHAY; ISSN: 0032-0889
NOTE: Includes references
PUB. COUNTRY: Maryland; United States
DOCUMENT TYPE: Article; Conference
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English
AB In potato ***plants*** (Solanum tuberosum), a chimeric yeast-derived invertase gene fused to a 35S cauliflower mosaic virus promoter has been expressed. The protein was targeted to the cell wall by using the signal peptide of proteinase inhibitor if fused to the amino terminus of the ***yeast*** ***invertase*** . The ***transformed*** ***plants*** had crinkled leaves, showed a reduced growth rate, and produced fewer tubers. Although in the apoplast of the leaves of the ***transformed*** ***plants*** the content of glucose and fructose rose by a factor of 20, and that of sucrose declined 20-fold, 98% of the carbohydrate in the phloem sap consisted of sucrose, demonstrating the strong specificity of phloem loading. In the leaf cells of the ***transformed*** ***plants*** , glucose, fructose, and amino acids,

especially proline, were accumulated. Consequently, the osmolality of the cell sap rose from 250 to 350 mosmol/kg. Our results show that the observed 75% decrease of photosynthesis is not caused by a feedback regulation of sucrose synthesis and is accompanied by an increase in the osmotic pressure in the leaf cells. In the ***transformed*** ***plants*** , not only the amino acid to sucrose ratio in the phloem sap, but also the amino acid and protein contents in the tubers were found to be elevated. In the tubers of the ***transformed*** ***plants*** , the protein to starch ratioincreased.

L8 ANSWER 29 OF 33 AGRICOLA
ACCESSION NUMBER: 91:80243 AGRICOLA
DOCUMENT NUMBER: IND91044208
TITLE: Different legumin protein domains act as vacuolar targeting signals.
AUTHOR(S): Saalbach, G.; Jung, R.; Kunze, G.; Saalbach, I.; Adler, K.; Muntz, K.
CORPORATE SOURCE: Institute of Genetics and Crop Plant Research, Sachen-Anhalt, FRG
AVAILABILITY: DNAL (QK725.P532)
SOURCE: The Plant cell, July 1991. Vol. 7, No. 3. p. 695-708
Publisher: Rockville, Md. : American Society of Plant Physiologists.
ISSN: 1040-4651
NOTE: Includes references.
DOCUMENT TYPE: Article
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English
AB Legumin subunits are synthesized as precursor polypeptides and are transported into protein storage vacuoles in field bean cotyledons. We expressed a legumin subunit in yeast and found that in these cells it is also transported into the vacuoles. To elucidate vacuolar targeting information, we constructed gene fusions of different legumin propolypeptide segments with either ***yeast*** ***invertase*** or chloramphenicol acetyltransferase as reporters for analysis in yeast or ***plant*** cells, respectively. In yeast, increasing the length of the amino-terminal segment increased the portion of invertase directed to the vacuole. Only the complete legumin alpha chain (281 amino acids) directed over 90% to the vacuole. A short carboxy-terminal legumin segment (76 amino acids) fused to the carboxy terminus of invertase also efficiently targeted this fusion product to yeast vacuoles. With amino-terminal legumin-chloramphenicol acetyltransferase fusions expressed in tobacco seeds, efficient vacuolar targeting was obtained only with the complete alpha chain. We conclude that legumin contains multiple targeting information, probably formed by higher structures of relatively long peptide sequences.

L8 ANSWER 30 OF 33 AGRICOLA
ACCESSION NUMBER: 91:44107 AGRICOLA
DOCUMENT NUMBER: IND91020645
TITLE: Slow-growth phenotype of transgenic tomato expressing apoplastic invertase.
AUTHOR(S): Dickinson, C.D.; Altabella, T.; Chrispeels, M.J.
CORPORATE SOURCE: University of California, San Diego, CA
AVAILABILITY: DNAL (450 P692)
SOURCE: Plant physiology, Feb 1991. Vol. 95, No. 2. p. 420-425
ill

Publisher: Rockville, Md. : American Society of Plant Physiologists.
CODEN: PLPHAY; ISSN: 0032-0889
NOTE: Includes references.
DOCUMENT TYPE: Article
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English

AB The growth of transgenic tomato (Lycopersicon esculentum) ***plants*** that express in their apoplast ***yeast*** ***invertase*** under the control of the cauliflower mosaic virus 35S promoter is severely inhibited. The higher the level of invertase, the greater the inhibition of growth. A second phenotypic characteristic of these transgenic ***plants*** is the development of yellow and necrotic spots on the leaves, and leaf curling. Again the severity of the symptoms is correlated with the level of invertase. These symptoms do not develop in shaded leaves indicating the need for photosynthesis. Keeping the ***plants*** in the dark for a prolonged period (24 hours) results in the disappearance of leaf starch from the control ***plants*** , but not from the ***plants*** with apoplastic invertase. These results are consistent with the interpretation that apoplastic invertase prevents photosynthate export from source leaves and that phloem loading includes an apoplastic step.

L8 ANSWER 31 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1992:124986 CAPLUS
DOCUMENT NUMBER: 116:124986
TITLE: Transgenic tobacco ***plants*** expressing yeast-derived invertase in either the cytosol, vacuole or apoplast: a powerful tool for studying sucrose metabolism and sink/source interactions
AUTHOR(S): Sonnewald, Uwe; Brauer, Monika; Von Schaewen, Antje; Stitt, Mark; Willmitzer, Lothar
CORPORATE SOURCE: Inst. Genbiol. Forsch. Berlin G.m.b.H., Berlin, 1000/33, Germany
SOURCE: Plant Journal (1991), 1(1), 95-106
CODEN: PLJUED; ISSN: 0960-7412
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In higher ***plants*** sucrose plays a central role with respect to both short-term storage and distribution of photoassimilates formed in the leaf. Sucrose is synthesized in the cytosol, transiently stored in the vacuole and exported via the apoplast. To elucidate the role of the different compartments with respect to sucrose metab., a yeast-derived invertase was directed into the cytosol and vacuole of transgenic tobacco ***plants*** . This was in addn. to the targeting of yeast-derived invertase into the apoplast described previously. Vacuolar targeting was achieved by fusing an N-terminal portion (146 amino acids long) of the vacuolar protein patatin to the coding region of the mature invertase protein. Transgenic tobacco ***plants*** expressing the yeast-derived invertase in different subcellular compartments displayed dramatic phenotypic differences when compared to wild-type ***plants*** . All transgenic ***plants*** showed stunted growth accompanied by reduced root formation. Starch and sol. sugars accumulated in leaves indicating that the distribution of sucrose was impaired in all cases. Expression of cytosolic ***yeast*** ***invertase*** resulted in the accumulation of starch and sol. sugars in both very young (sink) and older (source) leaves. The leaves were curved, indicating a more rapid cell expansion or

cell division at the upper side of the leaf. Light-green sectors with reduced photosynthetic activity were evenly distributed over the leaf surface. With the apoplastic and vacuolar invertase, the phenotypical changes induced only appear in older (source) leaves. The development of bleached and/or necrotic sectors was linked to the source state of a leaf. Bleaching followed the sink to source transition, starting at the rim of the leaf and moving to the base. The bleaching was paralleled by the inhibition of photosynthesis.

L8 ANSWER 32 OF 33 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:76421 CAPLUS
DOCUMENT NUMBER: 114:76421
TITLE: Recombinant manufacture of analogs of thaumatin I
INVENTOR(S): Blair, Lindley Calvin; Koduri, Raju Kanaka; Lee, Jar How; Weickmann, Joachim Ludwig
PATENT ASSIGNEE(S): International Genetic Engineering, Inc., USA
SOURCE: PCT Int. Appl., 55 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9005775	A1	19900531	WO 1989-US5018	19891106
W: AU, JP				
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
US 5221624	A	19930622	US 1989-407416	19890914
CA 2002318	AA	19900508	CA 1989-2002318	19891106
AU 9050450	A1	19900612	AU 1990-50450	19891106
AU 625879	B2	19920716		
EP 396741	A1	19901114	EP 1990-902746	19891106
EP 396741	B1	19960911		
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
JP 03502645	T2	19910620	JP 1990-503046	19891106
AT 142687	E	19960915	AT 1990-902746	19891106
AU 9227070	A1	19921217	AU 1992-27070	19921015
AU 651501	B2	19940721		

PRIORITY APPLN. INFO.: US 1988-268702 19881108
US 1989-407416 19890914
WO 1989-US5018 19891106

AB Analogs of thaumatin I with a reduced aftertaste of licorice are manufd. with recombinant yeast or Escherichia coli. Expression plasmid pING152T encoding [46-Lys-113-Asp-137-Asp] thaumatin I (I) was constructed and used to prep. yeast secretion vector pING152CVS contg. a SUC2 ***yeast*** ***invertase*** gene signal sequence. Yeast strain AH7(MAT.alpha., leu2-3) ***transformants*** harboring the secretion plasmid secreted .apprx.0.4 .mu.g I/mL. In an organoleptic test, I scored better than the wild type thaumatin I. Recombinant manuf. and product secretion of I in yeast employing various signal sequences were given.

L8 ANSWER 33 OF 33 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 11
ACCESSION NUMBER: 1990:625721 CAPLUS
DOCUMENT NUMBER: 113:225721
TITLE: Expression of a yeast-derived invertase in the cell wall of tobacco and Arabidopsis ***plants*** leads

to accumulation of carbohydrate and inhibition of photosynthesis and strongly influences growth and phenotype of transgenic tobacco ***plants***

AUTHOR(S): Von Schaewen, Antje; Stitt, Mark; Schmidt, Renate; Sonnewald, Uwe; Willmitzer, Lothar

CORPORATE SOURCE: Inst. Genbiol. Forsch. Berlin G.m.b.H., Berlin, 1000/33, Germany

SOURCE: EMBO Journal (1990), 9(10), 3033-44
CODEN: EMJODG; ISSN: 0261-4189

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Chimeric genes consisting of the coding sequence of the ***yeast*** ***invertase*** gene suc2 and different N-terminal portions of the potato-derived vacuolar protein proteinase inhibitor II fused to the 35C CaMV promoter and the poly(A) site of the octopine synthase gene were transferred into tobacco and A. thaliana ***plants*** using Agrobacterium based systems. Regenerated transgenic ***plants*** display a 50-500-fold higher invertase activity compared to non-***transformed*** control ***plants*** . This invertase is N-glycosylated and efficiently secreted from the ***plant*** cell, leading to its apoplastic location. Whereas expression of the invertase does not lead to drastic changes in transgenic A. thaliana ***plants*** , transgenic tobacco ***plants*** show dramatic changes with respect to development and phenotype. Expression of the invertase leads to stunted growth due to redn. of internodal distances, to development of bleached and/or necrotic regions in older leaves, and to suppressed root formation. In mature leaves, high levels of sol. sugars and starch accumulate. These carbohydrates do not show a diurnal turnover. The accumulation of carbohydrate is accompanied by an inhibition of photosynthesis, and in tobacco, by an increase in the rate of respiration. Measurements in bleached vs. green areas of the same leaf show that the bleached section contains high levels of carbohydrtes and has lower photosynthesis and higher respiration than green sections. It is concluded that expression of invertase in the cell interrupts export and leads to an accumulation of carbohydrates and inhibition of photosynthesis.

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=> s maize and invertase
L10        332 MAIZE AND INVERTASE

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KEEP DUPLICATES FROM MORE THAN ONE FILE?  Y/(N):n
PROCESSING COMPLETED FOR L10
L11         198 DUPLICATE REMOVE L10 (134 DUPLICATES REMOVED)

=> s l11 and transform?
L12           1 L11 AND TRANSFORM?

=> d l11 and altered
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'ALTERED' IS NOT A VALID FORMAT
In a multifile environment, a format can only be used if it is valid
in at least one of the files.  Refer to file specific help messages
or the STNGUIDE file for information on formats available in
individual files.
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L11 ANSWER 1 OF 198 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 1
AB Quant. detection methods are needed for enforcement of the recently introduced labeling threshold for genetically modified organisms (GMOs) in food ingredients. This labeling threshold, which is set to 1% in the European Union and Switzerland, must be applied to all approved GMOs. Four different varieties of ***maize*** are approved in the European Union: the insect-resistant Bt176 ***maize*** (Maximizer), Bt11 ***maize*** , Mon810 (YieldGard) ***maize*** , and the herbicide-tolerant T25 (Liberty Link) ***maize*** . Because the labeling must be considered individually for each ingredient, a quantitation system for the endogenous ***maize*** content is needed in addn. to the GMO-specific detection systems. Quant. real-time polymerase chain reaction detection methods were developed for the 4 approved genetically modified ***maize*** varieties and for an endogenous ***maize*** (***invertase***) gene system.

=> s l11 and altered
L13 4 L11 AND ALTERED

=> d l13 1-4

L13 ANSWER 1 OF 4 AGRICOLA
AN 96:58756 AGRICOLA
DN IND20534762
TI The Miniature1 seed locus of ***maize*** encodes a cell wall ***invertase*** required for normal development of endosperm and maternal cells in the pedicel.
AU Cheng, W.H.; Taliercio, E.W.; Chourey, P.S.
CS University of Florida, Gainesville, FL.
AV DNAL (QK725.P532)
SO The Plant cell, June 1996. Vol. 8, No. 6. p. 971-983
Publisher: [Rockville, MD : American Society of Plant Physiologists, c1989-
CODEN: PLCEEW; ISSN: 1040-4651
NTE Includes references
CY Maryland; United States
DT Article
FS U.S. Imprints not USDA, Experiment or Extension
LA English

L13 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2002 ACS
AN 1976:490316 CAPLUS
DN 85:90316
TI Carbohydrate and enzymic characterization of a high sucrose sugary inbred line of sweet corn
AU Gonzales, Jorge W.; Rhodes, Ashby M.; Dickinson, David B.
CS Dep. Hortic., Univ. Illinois, Urbana, Ill., USA
SO Plant Physiol. (1976), 58(1), 28-32
CODEN: PLPHAY
DT Journal
LA English

L13 ANSWER 3 OF 4 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2002:390798 BIOSIS

DN PREV200200390798
TI Molecular approaches to ***altered*** C partitioning: Genes for sucrose metabolism.
AU Koch, Karen E. (1); Zeng, Ying
CS (1) Horticultural Sciences Department, University of Florida, Gainesville, FL, 32611: kek@gnv.ifas.ufl.edu USA
SO Journal of the American Society for Horticultural Science, (July, 2002) Vol. 127, No. 4, pp. 474-483. print.
ISSN: 0003-1062.
DT Article
LA English

L13 ANSWER 4 OF 4 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1993:402685 BIOSIS
DN PREV199345061510
TI ***Altered*** gravity-induced changes in growth and starch concentrations in ***maize*** seedlings.
AU Piastuch, W. C. (1); Obenland, D. M.; Brown, C. S. (1)
CS (1) Bionetics Corp., Kennedy Space Center, FL 32899 USA
SO Plant Physiology (Rockville), (1993) Vol. 102, No. 1 SUPPL., pp. 87. Meeting Info.: Joint Annual Meeting of the American Society of Plant Physiologists and the Canadian Society of Plant Physiologists (La Societe Canadienne de Physiologie Vegetale) Minneapolis, Minnesota, USA July 31-August 4, 1993
ISSN: 0032-0889.
DT Conference
LA English

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FULL ESTIMATED COST	159.09	159.30

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CA SUBSCRIBER PRICE	-14.25	-14.25

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=> s yeast(w)invertase and monocot
L14 2 YEAST(W) INVERTASE AND MONOCOT

=> d l14 ibib ab 1-2

L14 ANSWER 1 OF 2 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1994:449841 BIOSIS
DOCUMENT NUMBER: PREV199497462841
TITLE: A carboxyl-terminal plant vacuolar targeting signal is not recognized by yeast.
AUTHOR(S): Gal, Susannah; Raikhel, Natash V. (1)
CORPORATE SOURCE: (1) MSU-DOE Plant Res. Lab., East Lansing, MI 48824-1312 USA
SOURCE: Plant Journal, (1994) Vol. 6, No. 2, pp. 235-240.
ISSN: 0960-7412.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Three different classes of signals for plant vacuolar targeting have been defined. Previous work has demonstrated that the carboxyl-terminal propeptide (CTPP) of barley lectin (BL) is a vacuolar targeting signal in tobacco plants. When a mutant BL protein lacking the CTPP is expressed in tobacco, the protein is secreted. In an effort to determine the universality of this signal, the CTPP was tested for its ability to target proteins to the vacuole of Saccharomyces cerevisiae. Genes encoding fusion proteins between the yeast secreted protein invertase and BL domains were synthesized and transformed into an invertase deletion mutant of ***yeast*** . ***Invertase*** assays on intact and detergent-solubilized cells demonstrated that invertase+CTPP was secreted, while nearly 90% of the invertase::BL+CTPP (fusion protein between invertase and BL containing the CTPP) and invertase::BL-CTPP proteins (fusion between invertase and BL lacking the CTPP) were retained intracellularly. These fusions were secreted in a mutant of yeast that normally secretes proteins targeted to the vacuole. With this and previous work, proteins representing all three classes of plant vacuolar targeting signals have now been tested in yeast, and in all cases, the experiments indicate that the plant proteins are directed to the yeast vacuole using signals other than those recognized by plants.

L14 ANSWER 2 OF 2 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1993:393824 BIOSIS
DOCUMENT NUMBER: PREV199396069124
TITLE: High affinity binding of a glycopeptide elicitor to tomato cells and microsomal membranes and displacement by specific glycan suppressors.
AUTHOR(S): Basse, Christoph W.; Fath, Angelika; Boller, Thomas (1)
CORPORATE SOURCE: (1) Friedrich-Miescher Inst., P.O. Box 2543, CH-4002 Basel Switzerland
SOURCE: Journal of Biological Chemistry, (1993) Vol. 268, No. 20, pp. 14724-14731.
ISSN: 0021-9258.
DOCUMENT TYPE: Article
LANGUAGE: English
AB We have previously isolated glycopeptides derived from ***yeast*** ***invertase*** that acted as highly potent elicitors in suspension-cultured tomato cells, inducing ethylene biosynthesis and phenylalanine ammonia-lyase activity, and we have found that the high mannose oligosaccharides released from the pure glycopeptide elicitors by endo-beta-N-acetylglucosaminidase H acted as suppressors of elicitor activity (Basse, C. W., Bock, K., and Boller, T. (1992) J. Biol. Chem. 267, 10258-10265). One of the elicitor-active glycopeptides (gp 8c) was

labeled with t-butoxycarbonyl-L-(35S)methionine and purified by reversed phase high performance liquid chromatography resulting in a specific radioactivity of the derivative of about 900 Ci/mmol. This radiolabeled glycopeptide showed specific, saturable, and reversible binding to whole tomato cells under conditions in which cells are responsive to elicitors as well as to microsomal membranes derived from these cells. Ligand saturation experiments, performed with microsomal membranes, gave a dissociation constant (K-d) of 3.3 nm as determined by Scatchard analysis. Various glycopeptide elicitors and preparations from ***yeast*** ***invertase*** were compared with respect to their abilities to compete for binding of 35 S-labeled gp 8c to tomato membranes and to induce ethylene biosynthesis in tomato cells. These studies revealed a high degree of correlation between elicitor activities in vivo and displacement activities in vitro. In both tests, a high activity depended on the presence of glycan side chains consisting of more than 8 mannosyl residues. The high mannose oligosaccharides that acted as suppressors of elicitor activity in vivo competed for binding of the labeled elicitor also. The suppressor-active glycan Man-11GlcNAc and the elicitor-active gp 8c exhibited very similar displacement activities, and the inhibitory constant (K-i) of the glycan Man-11GlcNAc was very similar to the K-d value calculated for 35S-labeled gp 8c, indicating that the glycopeptide elicitors and the glycan suppressors derived from these elicitors competed with similar affinities for the same binding site. The suppressor-inactive glycan Man-8GlcNAc had a 200-fold lower capacity to compete for binding of 35S-labeled gp 8c to tomato membranes compared with the suppressor-active glycan Man-11GlcNAc. Our results demonstrate the existence of a specific elicitor binding site in tomato cell membranes and suggest that glycopeptides and glycans act as agonists and antagonists for induction of the stress response, respectively, by competing for this binding site.

```
=> s yeast(w)invertase and rice
L15          0 YEAST(W) INVERTASE AND RICE

=> s yeast(w)invertase and wheat
L16         14 YEAST(W) INVERTASE AND WHEAT

=> duplicate remove l16
DUPLICATE PREFERENCE IS 'AGRICOLA, CAPLUS, EMBASE, BIOSIS'
KEEP DUPLICATES FROM MORE THAN ONE FILE?  Y/(N):n
PROCESSING COMPLETED FOR L16
L17           8 DUPLICATE REMOVE L16 (6 DUPLICATES REMOVED)

=> d l17 1-8

L17  ANSWER 1 OF 8  CAPLUS  COPYRIGHT 2002 ACS         DUPLICATE 1
AN   2000:341974  CAPLUS
DN   133:73208
TI   Influence of enzymes on the evolution of fructosans in sourdough
       ***wheat***   processes
AU   Escriva, Consuelo; Martinez-Anaya, Maria Antonia
CS   Instituto de Agroquimica y Tecnologia de Alimentos (CSIC), Valencia,
     E-46980, Spain
SO   European Food Research and Technology (2000), 210(4), 286-292
     CODEN: EFRTFO; ISSN: 1438-2377
PB   Springer-Verlag
```

DT Journal
LA English
RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2002 ACS
AN 1999:330967 CAPLUS
DN 131:4521
TI ***Wheat*** flour products with low monosaccharide content, dough for the products, and manufacture of the dough
IN Endo, Hisanori
PA Asahi Chemical Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11137164	A2	19990525	JP 1997-302371	19971105

L17 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 2
AN 1989:589687 CAPLUS
DN 111:189687
TI Requirements for efficient in vitro transcription and translation: a study using ***yeast*** ***invertase*** as a probe
AU Roitsch, T.; Lehle, L.
CS Univ. Regensburg, Regensburg, Fed. Rep. Ger.
SO Biochim. Biophys. Acta (1989), 1009(1), 19-26
CODEN: BBACAQ; ISSN: 0006-3002
DT Journal
LA English

L17 ANSWER 4 OF 8 AGRICOLA DUPLICATE 3
AN 87:93413 AGRICOLA
DN IND87060157
TI Cereal fructans: hydrolysis by ***yeast*** ***invertase*** , in vitro and during fermentation.
AU Nilsson, U.; Oste, R.; Jagerstad, M.
AV DNAL (TX393.J6)
SO Journal of cereal science, July 1987. Vol. 6, No. 1. p. 53-60
Publisher: London, Eng. : Academic Press.
ISSN: 0733-5210
NTE Includes references.
DT Article
FS Non-U.S. Imprint other than FAO
LA English

L17 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2002 ACS
AN 1978:422477 CAPLUS
DN 89:22477
TI Mechanism of ***yeast*** ***invertase*** release by a factor in ***wheat*** flour
AU Negoro, Hideo
CS Res. Inst., Kobe Coll., Hyogo, Japan
SO J. Ferment. Technol. (1978), 56(2), 96-101
CODEN: JFTED8

DT Journal
LA English

L17 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 4
AN 1974:67703 CAPLUS
DN 80:67703
TI Extraction of ***yeast*** ***invertase*** by a factor in ***wheat*** flour
AU Negoro, Hideo; Fuse, Michiko
CS Res. Inst., Kobe Coll., Nishinomiya, Japan
SO Hakko Kogaku Zasshi (1973), 51(12), 887-94
CODEN: HKZAA2
DT Journal
LA English

L17 ANSWER 7 OF 8 AGRICOLA
AN 74:37275 AGRICOLA
DN 74-9037635
TI Extraction of ***yeast*** ***invertase*** by a factor in ***wheat*** flour
AU Negoro, H; Fuse, M
AV DNAL (390.08 H12)
SO J Ferment Technol, 1973 Vol. 51, No. 12, pp. 887-894. Ref.
DT Journal; Article
LA English

L17 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2002 ACS
AN 1943:19191 CAPLUS
DN 37:19191
OREF 37:3113a-e
TI Sucrose and inulin-hydrolyzing enzymes in commercial enzyme preparations
AU Pigman, Wm. W.
SO J. Research Natl. Bur. Standards (1943), 30(Research Paper No. 1526), 159-75
DT Journal
LA Unavailable

=> s yeast(w)invertase and barley
L18 7 YEAST(W) INVERTASE AND BARLEY

=> d l18 1-7

L18 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2002 ACS
AN 1996:716865 CAPLUS
DN 126:28356
TI Purification and characterization of 1-SST, the key enzyme initiating fructan biosynthesis in young chicory roots (Cichorium intybus)
AU Van den Ende, Wim; Van Wonterghem, Dominik; Dewil, Erna; Verhaert, Peter; DeLoof, Arnold; Van Laere, Andre
CS Dep. Biology, K. U. Leuven, Heverlee, B-3001, Belg.
SO Physiologia Plantarum (1996), 98(3), 455-466
CODEN: PHPLAI; ISSN: 0031-9317
PB Munksgaard
DT Journal
LA English

L18 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2002 ACS
AN 1989:610060 CAPLUS
DN 111:210060
TI Processing and secretion of ***barley*** (1-3,1-4)-.beta.-glucanasse in yeast
AU Olsen, Ole; Thomsen, Karl Kristian
CS Dep. Physiol., Carlsberg Lab., Copenhagen, DK-2500, Den.
SO Carlsberg Res. Commun. (1989), 54(2), 29-39
CODEN: CRCODS; ISSN: 0105-1938
DT Journal
LA English

L18 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2002 ACS
AN 1989:403087 CAPLUS
DN 111:3087
TI ***Barley*** powdery mildew "invertase" is an alpha-glucosidase
AU Donaldson, Iain A.; Joergensen, J. Helms
CS Dep. Chem., Carlsberg Lab., Copenhagen, DK-2500, Den.
SO Carlsberg Res. Commun. (1988), 53(7), 421-30
CODEN: CRCODS; ISSN: 0105-1938
DT Journal
LA English

L18 ANSWER 4 OF 7 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1997:26232 BIOSIS
DN PREV199799325435
TI Purification and characterization of 1-SST, the key enzyme initiating fructan biosynthesis in young chicory roots (Cichorium intybus.
AU Van Den Ende, Wim; Van Wonterghem, Dominik; Dewil, Erna; Verhaert, Peter; De Loof, Arnold; Van Laere, Andre (1)
CS (1) Dep. Biol., Botany Inst., K. U. Leuven, Kardinaal Mercierlaan 92, B-3001 Heverlee Belgium
SO Physiologia Plantarum, (1996) Vol. 98, No. 3, pp. 455-466.
ISSN: 0031-9317.
DT Article
LA English

L18 ANSWER 5 OF 7 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1994:449841 BIOSIS
DN PREV199497462841
TI A carboxyl-terminal plant vacuolar targeting signal is not recognized by yeast.
AU Gal, Susannah; Raikhel, Natash V. (1)
CS (1) MSU-DOE Plant Res. Lab., East Lansing, MI 48824-1312 USA
SO Plant Journal, (1994) Vol. 6, No. 2, pp. 235-240.
ISSN: 0960-7412.
DT Article
LA English

L18 ANSWER 6 OF 7 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1989:497484 BIOSIS
DN BA88:124021
TI PROCESSING AND SECRETION OF ***BARLEY*** 1-3 1-4-BETA GLUCANASE IN YEAST.
AU OLSEN O; THOMSEN K K
CS DEP. PHYSIOL., CARLSBERG LAB., GAMLE CARLSBERG VEJ 10, DK-2500 COPENHAGEN VALBY.

SO CARLSBERG RES COMMUN, (1989) 54 (2), 29-40.
CODEN: CRCODS. ISSN: 0105-1938.
FS BA; OLD
LA English

L18 ANSWER 7 OF 7 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1989:227788 BIOSIS
DN BA87:119405
TI ***BARLEY*** POWDERY MILDEW INVERTASE IS AN ALPHA GLUCOSIDASE.
AU DONALDSON I A; JORGENSEN J H
CS DEP. BIOCHEM., UNIV. OXFORD, SOUTH PARKS RD., OXFORD 0X1 3QU, ENGL., UK.
SO CARLSBERG RES COMMUN, (1988) 53 (7), 421-430.
CODEN: CRCODS. ISSN: 0105-1938.
FS BA; OLD
LA English

=> s yeast(w)invertase and sorghum
L19 2 YEAST(W) INVERTASE AND SORGHUM

=> d l19 1-2

L19 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2002 ACS
AN 1970:484066 CAPLUS
DN 73:84066
TI Resistance of extracellular ***yeast*** ***invertase*** and other glycoproteins to denaturation by tannins
AU Strumeyer, David H.; Malin, Michael J.
CS Dep. of Biochem. and Microbiol., Rutgers State Univ., New Brunswick, N. J., USA
SO Biochem. J. (1970), 118(5), 899-900
CODEN: BIJOAK
DT Journal
LA English

L19 ANSWER 2 OF 2 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 1971:118115 BIOSIS
DN BA52:28115
TI RESISTANCE OF EXTRA CELLULAR ***YEAST*** ***INVERTASE*** AND OTHER GLYCO PROTEINS TO DENATURATION BY TANNINS.
AU STRUMEYER D H; MALIN M J
SO BIOCHEM J, (1970) 118 (5), 899-900.
CODEN: BIJOAK. ISSN: 0306-3275.
FS BA; OLD
LA Unavailable

=> d l19 1 ab

L19 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2002 ACS
AB Condensed ***sorghum*** tannin incubated with invertase (10 .mu.g) isolated from Saccharomyces FH 4C failed to decrease the activity of this enzyme, the lack of inhibition being a marked contrast to that obsd. with other enzymes. The resistance of the yeast enzyme and Aspergillus flavus tannase, which are glycoproteins contg. 50 and 25.4% carbohydrate, resp., to denaturation by tannins was proposed to be the consequence of their glycoprotein nature.

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COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	54.03	213.33
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NEWS 1		Web Page URLs for STN Seminar Schedule - N. America
NEWS 2	Apr 08	"Ask CAS" for self-help around the clock
NEWS 3	Apr 09	BEILSTEIN: Reload and Implementation of a New Subject Area
NEWS 4	Apr 09	ZDB will be removed from STN
NEWS 5	Apr 19	US Patent Applications available in IFICDB, IFIPAT, and IFIUDB
NEWS 6	Apr 22	Records from IP.com available in CAPLUS, HCAPLUS, and ZCAPLUS
NEWS 7	Apr 22	BIOSIS Gene Names now available in TOXCENTER
NEWS 8	Apr 22	Federal Research in Progress (FEDRIP) now available
NEWS 9	Jun 03	New e-mail delivery for search results now available
NEWS 10	Jun 10	MEDLINE Reload
NEWS 11	Jun 10	PCTFULL has been reloaded
NEWS 12	Jul 02	FOREGE no longer contains STANDARDS file segment
NEWS 13	Jul 22	USAN to be reloaded July 28, 2002; saved answer sets no longer valid
NEWS 14	Jul 29	Enhanced polymer searching in REGISTRY
NEWS 15	Jul 30	NETFIRST to be removed from STN
NEWS 16	Aug 08	CANCERLIT reload

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 NEWS 17   Aug 08   PHARMAMarketLetter(PHARMAML) - new on STN
 NEWS 18   Aug 08   NTIS has been reloaded and enhanced
 NEWS 19   Aug 19   Aquatic Toxicity Information Retrieval (AQUIRE)
                    now available on STN
 NEWS 20   Aug 19   IFIPAT, IFICDB, and IFIUDB have been reloaded
 NEWS 21   Aug 19   The MEDLINE file segment of TOXCENTER has been reloaded
 NEWS 22   Aug 26   Sequence searching in REGISTRY enhanced
 NEWS 23   Sep 03   JAPIO has been reloaded and enhanced
 NEWS 24   Sep 16   Experimental properties added to the REGISTRY file
 NEWS 25   Sep 16   Indexing added to some pre-1967 records in CA/CAPLUS
 NEWS 26   Sep 16   CA Section Thesaurus available in CAPLUS and CA
 NEWS 27   Oct 01   CASREACT Enriched with Reactions from 1907 to 1985

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               CURRENT MACINTOSH VERSION IS V6.0a(ENG) AND V6.0Ja(JP),
               AND CURRENT DISCOVER FILE IS DATED 01 OCTOBER 2002
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 NEWS WWW      CAS World Wide Web Site (general information)

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=> file agricola biosis embase caplus
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.21       0.21

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=> s invertase(w)inhibitor and plant and antisense
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L1            2 INVERTASE(W) INHIBITOR AND PLANT AND ANTISENSE

=> d l1 1-2

L1   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2002 ACS
AN   2001:598024  CAPLUS
DN   135:178157
TI   Usage of  ***invertase***  ***inhibitors***  to modulate invertase
     activity in  ***plant***  and kernel development and to protect
       ***plants***  against harmful/detrimental effects of stress and adverse
     environmental conditions
IN   Helentjaris, Tim; Bate, Nicholas John; Allen, Stephen M.
PA   Pioneer Hi-Bred International, Inc., USA; E.I. Du Pont De Nemours and Co.
SO   PCT Int. Appl., 83 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
PI   WO 2001058939      A2   20010816      WO 2001-US4492   20010212
     WO 2001058939      A3   20020307
         W:  AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
             CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EE, EE, ES, FI, FI,
             GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
             KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
             NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR,
             TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD,
             RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     US 2001044941      A1   20011122      US 2001-780717   20010209
PRAI US 2000-181509P    P    20000210

L1   ANSWER 2 OF 2  CAPLUS  COPYRIGHT 2002 ACS
AN   2000:133857  CAPLUS
DN   132:163613
TI   Transgenic  ***plants***  with reduced  ***invertase***
       ***inhibitor***  activity and enhanced content of storage substances
IN   Rausch, Thomas
PA   Germany
SO   PCT Int. Appl., 45 pp.
     CODEN: PIXXD2
DT   Patent
LA   German
FAN.CNT 1
     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
PI   WO 2000009719      A1   20000224      WO 1999-EP5890   19990811
         W:  AU, BR, CA, CZ, HU, ID, IL, IN, JP, MD, MX, PL, RO, RU, SK, TR,
             UA, US, ZA
         RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
             PT, SE
     DE 19836405        C1   20000302      DE 1998-19836405 19980812
     AU 9956215         A1   20000306      AU 1999-56215    19990811
     BR 9912963         A    20010508      BR 1999-12963    19990811
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     EP 1105511        A1   20010613       EP 1999-942852   19990811
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO
     JP 2002522087     T2   20020723       JP 2000-565153   19990811
PRAI DE 1998-19836405  A    19980812
     WO 1999-EP5890    W    19990811
RE.CNT  7     THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT


=> d l1 2 ab

L1   ANSWER 2 OF 2  CAPLUS  COPYRIGHT 2002 ACS
AB   The invention relates to transgenic   ***plants***   and   ***plant***
     cells comprising a reduced expression of   ***invertase***
       ***inhibitors***  .  The modification of the expression of the
       ***invertase***     ***inhibitors***   is achieved by introducing a cDNA
     sequence in an   ***antisense***   orientation with respect to a promoter.
     The expression of the   ***antisense***   DNA sequence results either by
     regulating the CaMV35S promoter or tissue-specific promoters.  As a result
     of the reduced inhibitor levels, invertase activity is enhanced with the
     result that levels of storage protein, starch, and oil in seeds are
     increased.


=> FIL STNGUIDE
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                      12.37      12.58

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                         ENTRY    SESSION
CA SUBSCRIBER PRICE                                      -0.62      -0.62

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COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                       0.24      12.82
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DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-0.62

STN INTERNATIONAL LOGOFF AT 18:14:29 ON 16 OCT 2002